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A PROPOSED ELECTRONIC FEEDER CALF EXCHANGE

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Introduction

Feeder calf production is an important step plate to the continued growth in meat production that is being mandated by strong worldwide demand for high quality protein foods. Coordination of feeder calf production with other segments of the food industry is currently the task of a marketing system where prices guide the activities of calf producers, feedlot operators and others in the system. In Ohio, as is probably the case nationwide, this marketing system is dominated by auction markets with terminal markets and private treaty sales playing somewhat less important roles.[1]

In its present state, this marketing system appears to have several problems basic to coordination. First,

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[1]Henderson, Dennis R., Roy H. McWhorter and Herbert H. Hadley , Feeder Calf Production and Marketing Patterns: Southeast Ohio. Ohio Cooperative Extension Service Report forthcoming.

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calves are not assembled and transported to feedlots in a way that minimizes the assembly and transportation costs. Second, feeder cattle have not been described and priced in a manner that has transmitted clear signals on quality and timing to buyers and sellers. And third, the relatively small number of calves available on individual farms or at assembly points in many areas frequently does not attract enough buyers to facilitate competitive pricing. The results are continuing inefficiencies in the marketing system and a lack of alignment between the output of the feeder calf producer and the input needs of the feedlot operator.

These problems may be more pronounced in areas such as Southeastern Ohio where feeder calf production is dominated by relatively small, geographically dispersed operations than in the range country where larger brood cow herds are more common, although Purcell's work at Oklahoma provides evidence of the same type of problems in that area.[2] Because of the importance of feeder calf production to the Southeast Ohio economy and the potential contribution of such production in this area to the orderly growth of the beef sector, we are directing considerable attention in Ohio to means of reducing these market coordination problems.

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[2]Purcell, Wayne D. "An Approach to Research on Vertical Coordination: The Beef System in Oklahoma" American Journal of Agricultural Economics, Vol. 55, No. 1 (February, 1973) pp. 65-69.

A New Marketing Mechanism

We have conceptualized a marketing mechanism that appears to have the potential capability to improve coordination in the feeder cattle industry. This system, dubbed the electronic feeder calf exchange, would utilize modern communications and computer technology to 1) transmit continuously updated information on supply-demand conditions to all feeder calf producers, feedlot operators and others, 2) facilitate the sale of feeder calves on a description basis, 3) provide an open, competitive price discovery mechanism, and 4) reduce the costs of assembling and transporting feeder cattle. The balance of this paper is given to the description of such a system.

Essentially, the proposal electronic exchange is a computerized version of the telephone auction such as Producers Livestock Association's feeder pig Tel-o-Sale. In that system, on specified auction dates animals are assembled at central concentration points where they are inspected, graded and sorted. A description of each lot is then circulated to prospective buyers who gather at several locations remote from the concentration yards. These remote locations are interconnected by amplified telephones. Beginning at an appointed time an agent of the marketing organization auctions each lot of animals via the network of amplified telephones. Buyers purchase on the basis of the descriptions provided and bid competitively against other buyers at all locations. To

the extent that the animals are described accurately, this type of selling offers several advantages. It reduces buyer time and expense, provides sellers with access to a greater number of potential buyers and encourages competitive pricing.

With the use of modern computer technology, this basic system can perform many additional functions. The electronic exchange would tie buyers and sellers together through a computer. Traders would be able to communicate directly with the computer using conventional dial or touchtone (pushbutton) telephones. The computer would be programmed to perform many of the functions of the market agent, including matching offers to sell with bids to buy, or "auctioneering"; compiling, summarizing and disseminating market and price information; and market clearing activities.

The idea of tying together telephones and computers for marketing purposes is not new. For example, Schrader, Heifner and Larzelere have designed and demonstrated a computer-telephone system for trading shell eggs.[3] Holder has designed a comparable system for slaughter hogs.[4]

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[3]Schrader, Lee F., Richard G. Heifner and Henry E. Larzelere , The Electronic Egg Exchange: An Alternative System for Trading Shell Eggs, Michigan State University Agricultural Economics Report No. 119, December, 1968.

[4]Holder, David L. The Economic Feasibility of a Forward Contract Market for Slaughter Hogs, Unpublished Ph. D. thesis, Michigan State University, 1970.

Both of those systems are for commodities where product quality is or can be readily determined as part of the buyer's processing activities, e. g. candling and carcass yield grading, thus, providing an accurate means for adjusting price for quality variations. To my knowledge, this is the first proposal for a computer-telephone market for a commodity that is not processed by the buyer into a product for final consumption. Because feeder cattle are not slaughtered by their buyers, additional features must be included in the system to assure accurate description of the commodities actually being traded. This point is addressed in greater detail later in the paper.

Basic Design of the System

Feeder calf producers, feedlot operators and other traders would be able to input information directly into the computerized system and receive other information in return. Access would be achieved by telephoning a WATS number connected to the computer. Users would then input information by dialing numbers on their telephone which correspond with a code that the computer is programmed to interpret. For example, at certain points in a program a trader could indicate "yes" to a given question by dialing "1" or "no" by dialing "2", and so on. The computer, using a mechanical voicebox, would respond verbally.

Thus, users would be able to converse with the computerized market in a prescribed manner, much as they now communicate with existing market agents.

Large scale users could also interface with the system by using conventional teletype computer terminals. These offer the advantage of "hard copy", or typewritten responses rather than audio responses and also are somewhat more convenient for inputing large amounts of data. These teletype terminals are probably not suitable for smaller users, however, due to their relatively high cost. The capability to access the system with no equipment other than a conventional telephone, however, makes it available to most users without additional investment on their part.

The major advantage of using a computer rather than people as the market agent is its ability to store an almost unlimited amount of information, access selected bits of this information instantaneously, rapidly calculate new information based upon a combination of stored data and information inputed by the user, and communicate with many users at the same time. This allows the system to serve an almost unlimited number of users and, through the use of wide area telephone service, allows these users to be dispersed over a wide geographical area.

The computer would be programmed to perform the following market functions: 1) accept offers by producers to sell feeder cattle at a price specified by the seller, 2) accept bids by feedlot operators to purchase feeders at prices specified by the buyers, 3) match bids to buy

and offers to sell at a common, freight equalized price, 4) aggregate together offers by several producers to sell in order to assemble a lot large enough to match a bid to buy, or vice versa, 5) determine the most efficient method of transporting calves from sellers to buyers and issue appropriate instructions, 6) store offers or bids for matching with future bids and offers over a period of time specified by the user, 7) compile and summarize selected price information, and 8) compile accounts of traders and issue invoices and vouchers. Appropriate capability would be built in to allow traders to specify number of head, quality, weight range and other important variables in addition to price.

To use the system traders would have to subscribe to the electronic market service. To become a member they would have to sign an agreement to abide by the terms and conditions of the market, post a bond to guarantee their performance, and agree to pay the appropriate fees and marketing costs. Each member would be assigned an identification number that would be recognized as an authorized user number by the computer, thus allowing him access to the system.

Geographical Pricing

All sellers would be assigned to a geographical zone. Each zone would have a designated assembly point. In most cases existing auction markets and concentration yards could be used for this purpose. Sellers would be responsible for delivering their calves to this point after their

sale was confirmed, and all prices to sellers would be quoted on the basis of calves delivered to their zone assembly point. Delivery would be completed within a specified period of time after the sale is consumated. These features would facilitate assembly of small lots from individual producers into lots large enough for efficient shipment to feedlots. Additionally, all weights would be verified at the zone assembly points.

Buyers would receive price quotes and purchase confirmations on a delivered basis, that is, for feeder calves delivered to their feedlot. Transportation costs between all member-buyers and all selling zone assembly points would be stored in the computer memory system, and the computer would automatically combine these costs with offer or bid prices before making a price quotation to any trader or matching offers with bids. That is, all pricing within the system would be on a freight equalized basis--equalized to the seller's zone assembly point and the buyer's feedlot location.

An example is helpful to illustrate this freight equalization feature. Assume that there are only two traders, a seller located in the Lancaster, Ohio selling zone and a buyer in Peoria, Illinois, and that the cost of transporting feeder calves between the two points is $3.00 per hundredweight. If the Peoria buyer posted a bid to purchase at $60/cwt. and the seller entered the system to determine at what price he could sell, the computer would instantaneously search its memory for

bid prices and transportation costs to the bidders location, calculate a freight equalized price at the seller's zone assembly point, and report this to the seller. In this case it would report $57/cwt. If another seller entered the system in, say, the Marietta zone where the transfer cost to Peoria would be somewhat higher, say $3.50/cwt., this same $60 bid price would be reported as $56.50/cwt. to the Marietta seller.

The process would work the same way for offers to sell. For example, if the Lancaster seller offered calves on the electronic market at $59/cwt., this would be reported to the Peoria buyer at $62/cwt., and so on. In actuality, the computerized system could simultaneously handle bids and offers from thousands of locations and report these to any user in terms of his specific location.

Description Selling

In addition to handling prices and transportation costs, the system must also allow for product description. This is necessary to assure that buyers receive the quality of calves that they desire and that sellers receive economic rewards consonant with the quality of their product. This is one of the most difficult parts of the system to visualize. Other electronic exchange proposals such as those for eggs and slaughter hogs have called for trading based upon one standardized quality, with final payments pending price adjustments based upon deviations from this standard. That system is

workable for those commodities where the buyer processes them and has the flexibility to handle products of varying quality.

This is typically not the case for feeder calves, however. Feedlot operators generally gear their operations to calves of a specific quality, therefore, there must be some method in the system to describe quality to traders. It is suggested that this problem can be handled by the use of feeder calf grades, with trading occurring in each of possibly 4 or 5 grades. Experience with the Ohio Approved Feeder Calf Sales suggests that Federal Feeder Calf Standards facilitate the use of 4 grades; Prime-Hi Choice, Choice, Hi Good, and Good, that typically encompass most of the feeder calves traded.[5] An additional utility-type grade might have to be added to handle lower quality calves if volume warranted.

In order to maintain reliable and uniform descriptions, third party grading is probably required. This could be accomplished by any of several agencies including the U. S. D. A., state agricultural departments or the marketing association. The agency would be responsible for maintaining a staff of professional graders who would grade calves on the farms where they are produced.

Experienced feeder calf graders indicate that reliable grades can be established for calves at 400 pounds, and

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[5]Smith, R. O., 1973 Summary Ohio Approved Feeder Calf Sales, Ohio State University, Department of Animal Science, Bulletin No. AS BC 732C.

calves graded at this weight will usually hold their grade until they reach 750-850 pounds. Calves are normally in feedlots prior to reaching this upper weight range. Thus, sellers could be required to arrange with the grading agency to have their calves graded after they reach 400 pounds and prior to being offered for sale.

The use of third party graders would also help guard against possibility of traders selling livestock that do not exist, either accidentally or purposefully. As all calves would have to be graded before they are offered for sale, a cross-check can be used. At the time of grading, graders would post on the computer the number of calves of each grade that each producer has available. This information would be stored in the computer memory until the producer makes a sale or offer to sell on the system. The computer would compare the offer with the inventory of record. If the number offered exceeded the recorded inventory the sales offer would be disallowed. After a sale is completed, the inventory record would be adjusted accordingly.

Other Features

The computer would be programmed to store in its memory offers and bids from member-traders for specified periods of time. Assume for example, that the Peoria buyer posted a bid to purchase 60 head of Hi Choice feeders at $60/cwt. but there were no offers on the

system that would supply these to Peoria at that price. The buyer would have the option to leave his bid in the system for matching with an offer at some later time, that is, whenever an offer was made that would match his bid or when the computer could aggregate together several offers to fill his bid. Or the bid could be stored for say, up to 24, 72 or 120 hours or until filled or removed by the bidder. Likewise, offers to sell could be maintained within the system.

This base of stored bids and offers at various prices would be an important feature of the system. It would inform traders at what price they could currently buy or sell and would allow them to arrange a trade at any time that they are willing to accept the existing offer or bid price.

Capability would also be built into the system to aggregate offers to meet bid specifications and vice versa. For example, if there was no single offer that would supply 60 head to Peoria at $60/cwt. delivered, the computer could combine offers that together would meet the bid. This might be filled, as an example, by an offer of 20 head in Lancaster at $57/cwt. (plus $3 transfer cost), another of 10 head at $58.50 in Marietta (plus $3.50 transfer cost) and a third offer of 30 head at Hillsboro for $56.50/cwt. (plus $2.83 transfer cost). Of course, once bids and offers are matched, they would be removed from the system and the corresponding buyers and sellers notified of the trade.

The computer would also be used to compile and report price summaries on trades occurring over recent periods and handle routine accounting activities.

Basic Trading Procedure

The following is an example of how trading might occur. To enter the market the trader calls the computer, enters his identification number, and indicates the quality category in which he is interested. Assume it is the Prime-Hi Choice market. The computer, after equalizing all prices to the trader's location (established by his I. D.) would report the following message:

The lowest producer offer on file is $57.50

The highest feeder bid on file is $57.25

The latest transaction occurred at $57.50

Today's average transaction price is $57.40
on 1080 head

Average Transaction price in last 72 hours is $58.10
on 4,120 head

The trader would then be asked if he wanted to accept an existing offer or bid or place a new one. If the trader is a seller and he expects the price to fall, he may accept the bid at $57.25. If he expects prices to rise, he could enter an offer at any price above $57.25 which would remain on the system for as long as he specified, until someone is willing to take the other side and make a transaction, or he withdraws it. Contrariwise, if the trade is a buyer and he expects prices to increase he

would accept the offer at $57.50. If he expected prices to fall he could enter a bid at any price below that level. In any case the price message reported to the next user would be adjusted accordingly. When a trade is consummated, appropriate delivery and payment instructions would be issued automatically to each party to that trade.

Concluding Comment

A new type of a market exchange system for feeder calves has been described. The system may initially appear complex and foreign. Certainly much work remains to be done before such a system could become operational. Developmental costs would be high. Extensive user education would be necessary. Trading costs must be ascertained. Implications for existing marketing agencies would need to be determined. The feasibility of trading forward deliverable contracts for feeder calves as part of the system should be explored. Nevertheless, such a system appears to offer high potential for improved coordination and performance in the feeder cattle market. It would place small traders on a par with their larger counterparts. It would improve pricing accuracy and market efficiency. It would provide rapid and inexpensive access to accurate market information. And it offers the possibility for a truly national open market system for feeder cattle.

These potential benefits demand the attention of everyone concerned with the performance of the feeder calf-market in particular and the open market system for agricultural commodities in general.